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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,406	01/06/2006	Seung-Woo Lee	AB-1642 US	5996
Hac-Chan Park McGuireWoods Suite 1800 1750 Tysons Boulevard, McLean, VA 22102				
7550 04/02/2009			EXAMINER WILLIS, RANDAL L	
			ART UNIT 2629	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/535,406

Applicant(s)

LEE ET AL.

Examiner

RANDAL WILLIS

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/18/05 and 2/26/09
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to application 10/535406 filed January 6th 2006.

Claims 1-12 are currently pending and have been examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 claims storing the image signals, however there are three sets of signals (first, second and modified) and it is unclear as to which are being stored. For examination purposes the limitation will read on storing the first, second and modified image signals.

Claim 7 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the multiplexer is changing the path of the signals going to the memory, when the signals are already stored in the memory. For

purposes of examination, the claim limitation will read " a multiplexer for changing a path of the image signals supplied to the memory unit."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,2, 3, 5, 6, 10 and 12 rejected under 35 U.S.C. 102(e) as being anticipated by Greier (2002/0149598).

Apropos claim 1, Greier teaches:

A device of driving a liquid crystal display including a plurality of pixels connected to gate lines and data lines and arranged in a matrix (Abstract), the device comprising:

a gray voltage generator generating a plurality of gray voltages ([0014] invention uses LCD with full grayscale capability);

an image signal modifier receiving first image signals for a pixel row and second image signals for a next pixel row (Image signals for luminance of pixels A and B as shown in Fig. 22, the two pixels can be from adjacent rows [0091]), selecting modified image signal depending on the first image signals and the second image signals (Fig.

22 shows step of creating a modified signal using the average luminance of A and B), and out-putting the modified image signals; and

a data driver selecting data voltages from the gray voltages based on the modified image signals from the image signal modifier and applying the data voltages to the pixels (Last step of Fig. 22 outputs new values A' and B' to be driven).

Apropos claim 2, Greier teaches:

The device of claim 1, wherein the image signal modifier comprises a memory unit storing the image signals ([0091] states a line memory would be required).

Apropos claim 3, Greier teaches:

The device of claim 2 wherein the image signal modifier stores the first image signals into the memory unit, and reads out the first image signals stored in the memory unit and stores the second image signals into the memory unit upon receipt of the second image signals (Inherent in line memory, which is being used [0091]).

Apropos claim 5, Greier teaches:

The device of claim 2, wherein the image signal modifier further comprises a data modifier stores the modified image signals depending on the first image signals and the second image signals (Fig. 22 references a LUT which contains the modified images to be sent out).

Apropos claim 6, Greier teaches:

The device of claim 5, wherein the data modifier comprises a look-up table (halftone LUT, Fig. 22).

Apropos claim 10, Greier teaches:

The device of claim 1, wherein each pixel includes first and second subpixels, each subpixel (pixels have subpixels [0013]) includes a switching element connected to one of the gate lines and one of the data lines (Switching TFTs inherent in active matrix LCD), and a pixel electrode connected to the switching element, and the first and the second subpixels are capacitively coupled with adjacent subpixels ([0009] uses capacitive coupling between subpixels to improve viewing angle).

Apropos claim 12, Greier teaches:

A method of driving a liquid crystal display including a plurality of gate lines, a plurality of data lines intersecting the gate lines, a plurality of switching elements connected to the gate lines and the data lines, and a plurality of pixel electrodes connected to the switching elements (gate lines, data lines and switching elements inherent in active matrix LCD's), the method comprising:

writing image data for a first pixel row into a memory ([0091]);

reading the image data for the first pixel row and writing image data for a second pixel row into the memory upon receipt of the image data for the second pixel row (Inherent in line memory, which is being used [0091]);

selecting modified image signals determined by the image signals for the first and the second pixel rows (Fig. 22 shows step of creating a modified signal using the average luminance of A and B); and

applying the modified image signals to the pixels through the switching elements (Last step of Fig. 22 outputs new values A' and B' to be driven).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Greier in view of Lee (2002/0180676).

Apropos claim 4, Greier fails to explicitly teach:

The device of claim 3, wherein the memory unit includes a dual- port memory provided with a read port and a write port.

In the same field of memory within a liquid crystal display, Lee teaches that the buffer memory can be composed of dual-port ram that can read and write simultaneously ([0090]).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use dual-port memory as taught by Lee as the line memory of Greier in order to allow a single memory to act as the line memory.

Claims 7-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Greier in view of Terashima (7,023,413).

Apropos claim 7, Greier fails to explicitly teach:

The device of claim 2, wherein the image signal modifier further comprises a multiplexer for changing a path of the image signals supplied to the memory unit depending on the first image signals and the second image signals the memory unit.

However, in the same field of memory devices for storing video signals, Terashima teaches using multiplexer before and after two memory sections so that

incoming image data can be stored in one memory while the other memory is read (See Fig. 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide multiplexers as taught by Terashima in the line memory of Greier in order to achieve with two single port memories the same functionality as a dual port memory that would be required.

Apropos claim 8, Greier fails to explicitly teach:

The device of claim 7, wherein the multiplexer changes the path in response to a control signal from an external device, and the control signal is synchronized with a horizontal synchronization signal and a data enable signal having a period equal to a transmission time of the image signals for a pixel row.

However, examiner takes official notice that the synchronization of control signals with horizontal signals is well known in the art, and also with multiplexers for line memory, the control signal is commonly synchronized with the transmission time for the line the memory stores. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to synchronize the multiplexer in the combination of Greier and Terashima to the horizontal synchronization signal and the transmission time of the line memory in order to provided the correct timing for the line memory to read in the second image signal while reading out the first.

Apropos claim 9, Terashima further teaches:

The device of claim 7, wherein the memory unit comprises a pair of single port memories reading and writing in turn (Memories 1 and 8 can only read or write at any given time.).

Allowable Subject Matter

Claim 11 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RANDAL WILLIS whose telephone number is (571)270-1461. The examiner can normally be reached on Monday to Thursday, 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RLW

/Amr Awad/
Supervisory Patent Examiner, Art Unit 2629